Dear Neighbor,

BPA, along with your local electric utility, is continually looking for ways to improve safety awareness and practices around electrical lines and equipment. We feel our efforts are best spent in reaching people like yourself — those most likely to be living and working around high-voltage power lines.

This booklet presents safe practices for work and recreation activities near high-voltage transmission lines. It documents and expands on information that has generally been available to the public.

Please take this opportunity to reacquaint yourself, members of your family, and others that use or have access to your property, with these safety precautions. If you have other questions, please feel free to contact your nearest BPA office (listed on page 1), or your local utility.

Thank you for taking the time to let us share how "working smarter" near power lines can save lives — even your own.

Sincerely,

Fred M. Johnson

FRED JOHNSON, CHAIRPERSON
Central Safety and Health Committee
Bonneville Power Administration

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Preface

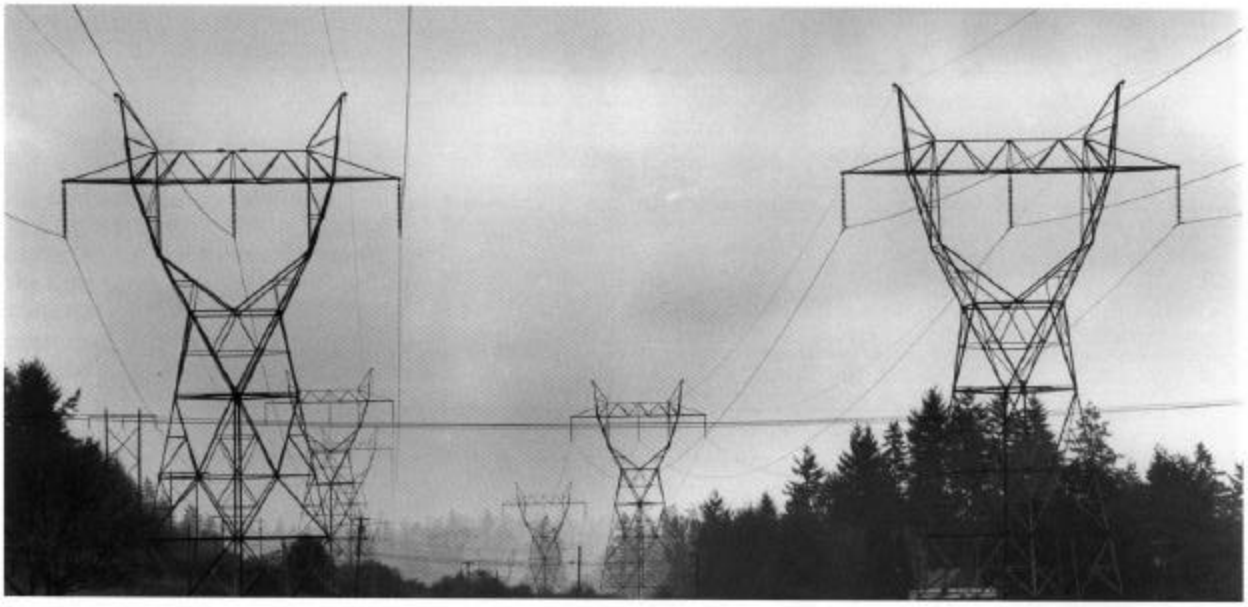
High-voltage transmission lines can be just as safe as the electrical wiring in our homes — or just as dangerous. The crucial factor is ourselves: we must learn to behave safely around them.

This booklet is a basic safety guide for those who live and work around power lines. It deals primarily with nuisance shocks due to induced voltages, and with potential electric shock hazards from contact with high-voltage lines. See last page for references on possible long-term biological effects of transmission lines.

In preparing this booklet, the Bonneville Power Administration has drawn on more than 50 years of experience with high-voltage transmission. BPA operates one of the world's largest networks of long-distance, high-voltage lines. This system has more than 400 substations and about 15,000 miles of transmission lines, almost 4,400 miles of which are operated at 500,000 volts.

BPA's lines make up the main electrical grid for the Pacific Northwest. The grid delivers large blocks of power to substations located near load centers. Public and investor-owned utilities and rural cooperatives take delivery of the power at these points and deliver it to the ultimate customers.

BPA's lines cross all types of property: residential, agricultural, industrial, commercial, and recreational. They traverse hundreds of miles of irrigated and non-irrigated farmlands.



If you have questions about safe practices near transmission lines, call the nearest BPA regional office listed below.

Due to safety considerations many of the practices suggested in this booklet are restrictive. This is because they attempt to cover all possible situations, and the worst conditions are assumed. Oftentimes, the restrictions can be tempered. To determine what practices are applicable to your case, contact BPA.

SNOHOMISH REGION
914 Avenue D
Snohomish, WA 98290
(360) 568-4962

OLYMPIA REGION
5240 Trosper Rd. S.W.
Olympia, WA 98512-5623
(360) 704-1601

EUGENE REGION
8600 Franklin
Eugene, OR 97405
(541) 465-6991

REDMOND REGION
3655 W. Highway 126
Redmond, OR 97756
(541) 548-4015

WALLA WALLA REGION
1520 Kelly Place
Walla Walla, WA 99362
(509) 527-6241

SPOKANE REGION
707 W. Main, Suite 500
Spokane, WA 99201-0608
(509) 358-7376

MONTANA REGION
2520 US Highway 2 East
Kalispell, MT 59901
(406) 755-6202

IDAHO FALLS REGION
1350 Lindsay Blvd.
Idaho Falls, ID 83402
(208) 524-8770

Using the Easement

Before a transmission line is built, BPA negotiates with the landowner for the right to cross the land as required for the construction, operation and maintenance of the line. Usually, BPA acquires easement rights to construct, operate and maintain a transmission line and the right to keep the easement clear of all structures, trees, brush, fire hazards and any other vegetation that may interfere with the operation or maintenance of the line. Almost all farm crops can be grown safely under transmission lines. Crops grown on trellises require special consideration. Call BPA before installing trellises.

Call the nearest BPA regional office if you plan to use the right-of-way for any use other than growing crops.

Ask for the *"Landowner's Guide to Use of BPA Rights-of-Way,"* which explains how to apply for permission to use a portion of a BPA right-of-way and easements for approved purposes.

Construction and maintenance of homes, sheds, machinery buildings or any other structures, are specifically prohibited within a right-of-way.

These arrangements also serve to eliminate possible hazards.

General Safe Practices

BPA designs and maintains its facilities to meet or exceed the rules set forth in the National Electrical Safety Code. BPA provides information on safe practices because serious accidents involving transmission lines can be avoided if simple precautions are taken. Every kind of electrical installation — from the 110-volt wiring in your home to a 500,000-volt transmission line — must be treated with respect.

The most significant risk of injury from a transmission line is the danger of electrical contact. Electrical contact between an object on the ground and an energized conductor can occur even though the two do not

Farm equipment or open large machinery 14 feet or less in height may be operated safely under all BPA lines in cultivated fields.

actually touch. In the case of high-voltage lines, electricity will arc across an air gap. The distance varies with the voltage at which the line is operated. Unlike the wiring at home, the conductors of overhead transmission lines are not enclosed by an electrical insulating material.

Injuries are more likely to result with lower voltage power lines (12,500 to 115,000 volts) than with higher voltage lines because contact is more likely. The electrical conductors of lower voltage lines are closer to the ground, smaller, and less noticeable. an injury from contact with a 12,500-volt line can be just as serious as that from a 500,000-volt line.

The most important safe practice is this:

Avoid bringing yourself, or any object you are holding, too close to an overhead line.

In other words, do not lift, elevate, build or pass under a transmission line any object, implement, facility or vehicle that could become near the energized conductors.

BPA does not recommend that anyone attempt to calculate how close they can come to a transmission line. As a general precaution when under a line, never put yourself or any object any higher than 14 feet above the ground.

The National Electrical Safety Code specifies a minimum safe clearance for each operating voltage. BPA builds its lines so that the clearance between the conductors of a line and the ground meets or exceeds the minimum set forth in the code.

The minimum clearance to ground usually occurs midway between towers because the conductors sag. The clearance is usually greatest near the towers or poles.

Vehicles and large equipment up to 14 feet in height, such as harvesting combines, cranes, derricks and booms, can be operated safely under all BPA lines that pass over roads, driveways, parking lots, cultivated fields or grazing lands. The operators of equipment that can be extended, such as bale wagons, stack movers or cranes, should exercise extreme care when near a power line.

The 14 feet limitation is a general standard applicable in the worst possible situations. In some instances, it can be exceeded without any problems. However, care must be taken since transmission lines sag, or droop, when they become heated. Having passed safely beneath a line in December with a piece of equipment higher than 14 feet does not automatically mean you can do so in July.

Instead of enumerating every situation or exception, we suggest, again, that you contact the nearest BPA regional office or your local utility, if you have need to exceed the 4-meter 14-feet limitation.

Induced Voltages

Under certain conditions, a perceptible electrostatic voltage can be induced on such objects as a large vehicle, a fence, metal building or irrigation system. This can happen when the object is near a high-voltage transmission line and is insulate from the ground.

When an induced voltage is present, touching a vehicle, wire fence, metal building or irrigation system can result in a sensation similar to the shock you may receive when you cross a carpet and then touch a door-knob. The static discharge from the rug is momentary. The sensation from a voltage induced by an alternating-